**Game Changing Development**

# Composite Technologies for Exploration (CTE)

Completed Technology Project (2016 - 2021)

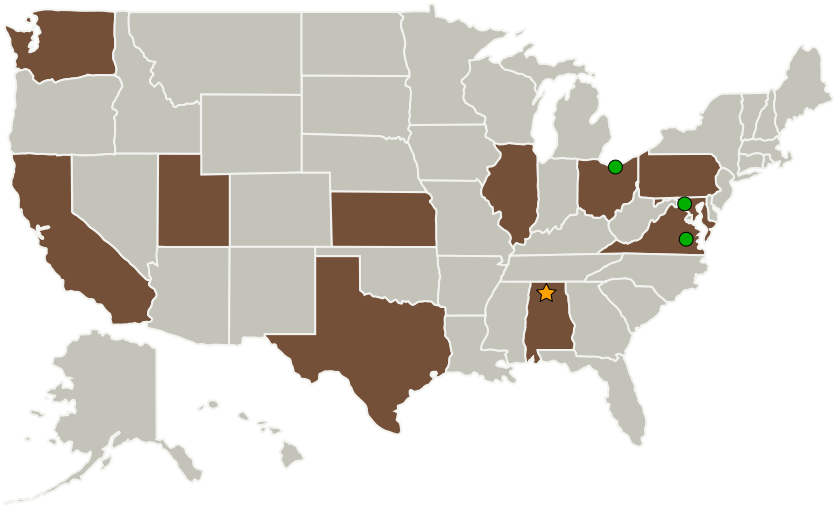
## Project Introduction

The CTE Project has developed and demonstrated critical composites technologies with a focus on joints that utilize NASA expertise and capabilities. The project has advanced composite technologies providing lightweight structures to support future NASA exploration missions. The CTE project has demonstrated weight-saving, performance-enhancing bonded joint technology for Space Launch System (SLS)-scale composite hardware.

## Anticipated Benefits

- Improve the analytical capabilities required to predict failure modes in composite structures.
- Support SLS payload adapter by maturing composite bonded joint technology and analytical tools to enable risk reduction.

## Primary U.S. Work Locations and Key Partners




Composite Technologies for Exploration

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# Composite Technologies for Exploration (CTE)

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| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Marshall Space Flight Center(MSFC) | Lead Organization | NASA Center | Huntsville, Alabama |
| Bally Ribbon Mills(BRM) | Supporting Organization | Industry | Bally, Pennsylvania |
| Convergent Manufacturing Technologies US | Supporting Organization | Industry | Seattle, Washington |
| Cornerstone Research Group, Inc. | Supporting Organization | Industry | Miamisburg, Ohio |
| ●Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |
| ●Goddard Space Flight Center(GSFC) | Supporting Organization | NASA Center | Greenbelt, Maryland |
| Heatcon Composite Systems | Supporting Organization | Industry | Tukwila, Washington |
| Hexel | Supporting Organization | Industry | |
| ●Langley Research Center(LaRC) | Supporting Organization | NASA Center | Hampton, Virginia |
| National Institute for Aviation Research | Supporting Organization | Academia | Wichita, Kansas |
| Plasmatreat | Supporting Organization | Industry | Elgin, Illinois |

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Marshall Space Flight Center (MSFC)

**Responsible Program:**

Game Changing Development

## Project Management

**Program Director:**

Mary J Werkheiser

**Program Manager:**

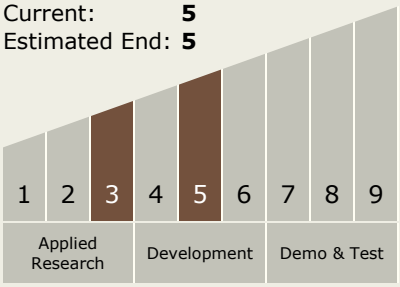
Gary F Meyering

**Project Manager:**

John C Fikes

## Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



# Composite Technologies for Exploration (CTE)

Completed Technology Project (2016 - 2021)

| Co-Funding Partners | Type | Location |
|---|---|---|
| Exploration Systems Development Division | NASA Program | |
| Game Changing Development(GCD) | NASA Program | |
| Small Business Innovation Research | NASA Program | |

| Primary U.S. Work Locations | |
|---|---|
| Alabama | California |
| Illinois | Kansas |
| Maryland | Ohio |
| Pennsylvania | Texas |
| Utah | Virginia |
| Washington | |

### Links

Testing and Analysis Correlation of Composite Sandwich Longitudinal Bonded Joints for Space Launch Vehicle Structures *(https://www.nxtbook.com/nxtbooks/sampe/journal_20200506/index.php?startid=56#/p/10)*

### Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

## Technology Areas

**Primary:**

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes

**Other/Cross-cutting:**

- TX11 Software, Modeling, Simulation, and Information Processing

## Target Destinations

Earth, The Moon, Mars

## Supported Mission Type

Projected Mission (Pull)